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(54) Title: OLEFIN POLYMERIZATION PROCESS

(57) Abstract: A process for polymerizing one or more alpha-olefins of formula $\text{CH}_2=\text{CHT}$ wherein T is a hydrogen atom or a $\text{C}_1\text{-}\text{C}_{20}$ alkyl radical comprising the following steps: a) contacting in a continuous way one or more of said alpha olefins with a metallocene based catalyst system in a loop reactor, wherein: (i) the reaction is carried out in a liquid medium; (ii) the average residence time of the metallocene-based catalyst system is not more than 30 minutes; (iii) the temperature of the loop ranges from 25° to 70°C; in order to obtain a polymerization degree ranging from 60 to 500 g per gram of catalyst system; b) feeding in continuous the prepolymerized metallocene-based catalyst system obtained in step a) into a polymerization reactor C) polymerizing one or more alpha-olefins, the same or different from the alpha olefins used in step a), in the presence of said prepolymerized metallocene-based catalyst system.